this coast-line. That the temperature fell rapidly within five miles of both places is similar to the Labrador coast results. The results for the Fastnet are not so marked as for Lundy Island, but the ship passed the former place at a greater distance.

A solution of the iceberg problem seems near at hand, but the greater value of a means of locating land cannot be overlooked.

An exceedingly sensitive self-recording instrument such as the micro-thermometer is essential for the work described. The conflicting experiences of North Atlantic sea captains alone testify to the uselessness of individual observations. It is to a knowledge of the *rate and characteristic of the temperature variation in the sea*, rather than to the actual temperature itself, that we must look for means by which the safety of navigation may be increased.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Cambridge.—The death of the master of Gonville and Caius College removes from Cambridge University one of its most loyal and hard-working members. He obtained his degree in the first class in the Classical Tripos forty-three years ago. He was elected to a fellowship at his college in 1870, and since then had devoted himself whole-heartedly to its interests and to those of the University. Mr. Roberts was for some time University lecturer in comparative philology, and his "Introduction to Greek Epigraphy" is a standard work on the history of the Greek alphabet. He always took the greatest interest in promoting new subjects of study, and played a prominent part in the establishment of the teaching of forestry, and in the development of modern languages. He was also a most active member of the board of the Cambridge Association, and of the Appointments Board, where his wide and minute knowledge of the outer world were of the greatest importance. Cambridge and Caius have indeed lost one who served them well.

Oxford.—It is the opinion of many resident members of the University that reforms on the plan initiated by Lord Curzon as Chancellor some two or three years ago have either not proceeded fast enough, or have not taken the right direction. These views have found expression in a memorial addressed to Lord Curzon in favour of the appointment of a commission to inquire into changes that may be desirable in regard to the constitution and legislative machinery of the University, and the administration of the resources of the University and the colleges. The answer received from the Chancellor shows that he is to some extent in sympathy with the views and aims of the memorialists. At the same time, he makes it clear that he would regard the demand for a commission at the present time as inopportune, and that he would himself withhold his support from a movement for its appointment.

On June 18 Convocation passed a decree authorising the Vice-Chancellor to apply, on behalf of the University, to the Board of Agriculture and Fisheries for a grant of 300*l.* a year for the expenses of agricultural research relating to the soils of Oxfordshire and parts of the adjacent counties, to be conducted in the School of Rural Economy under the direction of the Sibthorpian professor (Prof. Somerville). On the same day a decree passed Congregation authorising the Curators of the University Chest to receive from the Development Commissioners the sum of 900*l.* to be applied in aid of the investigations into the economics of agriculture, and to provide a sum of 300*l.* a year for three years for the same purpose if the Development Commissioners shall in each of the three years make a grant of not less than 600*l.* towards the same object. In introducing this decree, the president of Magdalen announced that Mr. W. Morrison, of Balliol College, in addition to his other benefactions, had promised 25*l.* a year for three years towards this object, and that further contributions of a similar kind were expected.

London.—At the meeting of the Senate on June 12, Dr. W. P. Herringham was elected Vice-Chancellor for the year 1912–13, in succession to Sir William Collins. Dr. Herringham is a physician of St. Bartholomew's Hospital, and is one of the representatives of the faculty of medicine in the Senate.

Dr. W. H. Eccles has been appointed to the new University readership in graphics, tenable at University College.

Prof. J. Norman Collie, F.R.S., has been appointed director of the chemical laboratories at University College in succession to Sir William Ramsay.

The degree of D.Sc. in chemistry has been granted to Rev. L. A. Levy, an external student, for a thesis entitled "Studies in Platinocyanides," and other work.

The late Lady Welby's library has been presented to the University.

A gift of 1400*l.* a year for three years from Mr. Ratan Tata has been gratefully accepted for the "endowment of research into the principles and methods of preventing and relieving destitution and poverty."

Scarcely a week passes without the announcement of a munificent gift for higher education in the United States. In the issue of *Science* for May 31 last it is reported that Mr. Clarence H. Mackay and his mother have given 30,000*l.* to the University of Nevada, making their total gifts 80,000*l.*; and that Allegheny College has completed the raising of 80,000*l.*, thereby securing the 20,000*l.* conditional gift of the General Education Board. This makes the total productive endowment of the college 205,000*l.* President Crawford stated in his announcement on the completion of the fund that the immediate results would be the addition of two new assistant professors and several new instructors to the staff.

A Franchise and Registration Bill, which provides, among other matters, for the abolition of university constituencies, was introduced in the House of Commons on Monday by Mr. J. A. Pease, President of the Board of Education. There are at present three university constituencies in England, two in Scotland, and one in Ireland, returning the following nine members to Parliament:—Oxford, Right Hon. Sir W. R. Anson, Bart., and Lord H. Cecil; Cambridge, Mr. J. F. P. Rawlinson and Sir Joseph Larmor, F.R.S.; London, Sir Philip Magnus; Edinburgh and St. Andrews, Right Hon. Sir R. B. Finlay, G.C.M.G.; Glasgow and Aberdeen, Sir Henry Craik, K.C.B.; Irish University, Right Hon. Sir E. H. Carson and Right Hon. J. H. M. Campbell. The number of university electors returning these nine representatives is 46,670, of whom about 20,000 return the five English university members, 21,000 the two Scottish members, and 5000 the two Irish members. It is proposed by the Bill that the university vote and representation shall cease, as being inconsistent with the principle of "one man, one vote."

In the House of Commons on June 12, Sir Philip Magnus asked the President of the Board of Education whether the Royal Charter granted to the Imperial College of Science and Technology imposed on the governing body of the College an obligation to carry on the work of the Royal College of Science, London; and, if so, whether the obligation would be

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consistent with the restriction of the teaching at the Imperial College to post-graduate research work. Mr. Pease replied that the answer to the first part of the question was in the affirmative so far as the purposes referred to in Article II. were concerned. When there was any proposal on the part of the governors to confine the work to post-graduate research, a question of the interpretation of the charter would arise, upon which he might have to express his opinion as visitor on behalf of the Crown. Until then he did not think he should be called upon to answer the question. In reply to a further question, Mr. Pease stated that no immediate alteration in substance was contemplated in the conditions for Royal scholarships or other awards in science.

THE Board of Education has recently issued a circular detailing the changes in the regulations respecting the grants to be paid to technical schools for the session 1912–13 (Grant Regulations for Technical Schools, &c., Circular 795, Board of Education). The changes deal mainly with, first, the withdrawal of certain of the grants for agricultural education formerly paid by the Board of Education, and, secondly, certain modifications in the regulations respecting the minimum length of "group courses" and the method of determining the minimum average attendance to be made by students at "group courses." With respect to the first of these, "in consequence of the greatly increased amount of State aid which is now made available for agricultural education in county areas by the advance made to the Board of Agriculture out of the Development Fund," the Board of Education will not pay grants for technical instruction in agricultural subjects by any teacher recognised by the Board of Agriculture and Fisheries as a member of the staff of an agricultural college or of a county agricultural staff. The alterations in the regulations respecting group courses are in the direction of less stringency and more freedom to the institutions. Under the present regulations, no grant is made for instruction in any subject or course in which less than twenty hours of instruction is given in the year. The new regulations permit of courses in any subject for a less number of hours, provided that such instruction forms part of a "grouped course," which must occupy, as at present, "at least four hours a week and eighty hours in all for the whole session." In addition, short courses of not fewer than ten hours each may be approved "in certain subjects (other than arithmetic, English, &c.) if they consist of concise and suggestive instruction given to students whose previous general familiarity with the subject enables them to profit by instruction of this kind."

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 13.—Sir Archibald Geikie, K.C.B., president, in the chair.—C. T. R. **Wilson**: An expansion apparatus for making visible the tracks of ionising particles in gases, and some results obtained by its use. The method of making visible and photographing the tracks is essentially that described in a previous communication. The apparatus has been enlarged and otherwise improved. The paths of alpha-particles are generally straight or nearly so until within about a mm. of the end (in air at atmospheric pressure) where they become bent. Portions of the tracks of beta-particles from radium have been photographed, the individual ions set free being made visible by the cloud particles condensed upon them, so that they may readily be counted. The photographs of the clouds formed when a narrow beam of X-rays is sent through the cloud chamber show the tracks of kathode or beta-particles starting within the primary beam and extending for some distance beyond it. There is no indication of any action of the X-rays other than the production of the corpuscular rays. The corpuscular rays appear to start in all directions, showing no preference for that of the primary beam.—Hon. R. J. **Strutt**: Chemically active modification of nitrogen, produced by the electric discharge. IV. (1) Active nitrogen is a highly endothermic body, but its energy is of the same order of magnitude as that of other chemical substances. (2) In the reversion of active to ordinary nitrogen, the number of atoms ionised is a very small fraction of the whole number concerned in the change. The ionisation is a subordinate effect, and may be due to light of very short wave-length emitted in the reaction. (3) Additional experiments are described to prove that the change of active nitrogen is more rapid at low temperatures. This is thought to be connected with the monatomic character of the molecule, and to throw light on the connection between temperature and velocity of reaction in other cases.—Prof. J. C. **McLennan**: The series lines in the arc spectrum of mercury.—Prof J. C. **McLennan**: The constitution of the mercury green line $\lambda = 5461$ AU; and on the magnetic resolution of its satellites by an echelon grating.—Prof. W. H. **Young**: The convergence of certain series involving the Fourier constants of a function.—Prof. W. H. **Young**: Classes of summable functions and their Fourier series.—H. G. **Moseley**: The number of β-particles emitted in the transformation of radium. The number of β-particles emitted at the disintegration of each atom has been determined by measuring the current carried in vacuo by the radiation from a known quantity of active material. It is found that one atom of radium B and an atom of radium C together emit 2·20 β-particles on an average; that an atom of radium B emits the same number of particles as an atom of radium C, and that an atom of radium E appears to emit less than one β-particle. From measurements of the ionisation produced by active deposit of radium emitting a measured number of β-particles, the number of ions produced by a β-particle per cm. of path in air has been calculated. This number varies approximately as $\lambda^{\frac{1}{3}}$, where λ is the absorption coefficient of the radiation for aluminium.—S. D. **Carothers**: Portland experiments on the flow of oil. The paper was primarily the outcome of an attempt to obtain from the results of a series of experiments, which came into the writer's hands, a relation between velocity and resistance for oil. It was seen that a considerable number of the results of the experiments followed the capillary law, and attention was directed to determining where this broke down.—G. B. **Jeffery**: A form of the solution of Laplace's equation suitable for problems relating to two spheres.—A. Ll. **Hughes**: The emission velocities of photo-electrons. This investigation was undertaken to determine the relations between the maximum velocity with which electrons are emitted from metallic surfaces illuminated by ultra-violet light and (*a*) the wave-length of the light and (*b*) the nature of the metal.

Physical Society, May 21.—Prof. C. H. Lees, F.R.S., vice-president, in the chair.—Prof. G. W. O. **Howe**: The calibration of wave-meters for radio-telegraphy. Wave-meters consisting of a variable air-condenser and a set of coils can be calibrated approximately by calculation from the known capacity of the condenser and the inductance of the coils. The most probable source of error is that due to the capacity from turn to turn of the coil. This can be allowed for, with sufficient accuracy for all practical purposes, by finding the natural frequency of the coil alone, and

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